

1 **WHAT IS CLAIMED IS:**

- 2 1. A vibration isolator for a ceiling fan, and the vibration isolator
3 comprising:
4 a stationary tube having a bottom end, a diameter and a sidewall;
5 a rotatable tube rotatably connected to the stationary tube and having a
6 top end and a sidewall, the top end of the rotatable tube rotatably connected to
7 the bottom end of the stationary tube;
8 a torsional damping device connecting the stationary tube to the
9 rotatable tube to reduce torsional forces; and
10 a compression spring mounted between the bottom end of the stationary
11 tube and the top end of the rotatable tube to reduce longitudinal vibrations.
12 2. The vibration isolator as claimed in claim 1, wherein
13 the stationary tube further has a bottom edge formed inward at the
14 bottom end of the stationary tube and forming a first opening,
15 the rotatable tube further has a top edge formed inward on the top end of
16 the rotatable tube and forming a second opening, and
17 the torsional damping device comprises
18 a connecting tube rotatably mounted in the stationary tube, and
19 having an enlarged open tubular head with a diameter, a shoulder and a narrow
20 tubular neck, the diameter of the enlarged open tubular head being slightly
21 smaller than the diameter of the stationary tube, the narrow tubular neck having a
22 bottom end passing through the first opening in the bottom end of the stationary
23 tube, extending out of the first opening and attached to the top edge of the
24 rotatable tube;

1 multiple rollers rotatably mounted between the bottom edge and
2 the shoulder of the connecting tube; and

3 a coil spring mounted in the stationary tube and having a first
4 end attached inside the sidewall of the stationary tube, and a second end passing
5 through the connecting tube and the second opening in the rotatable tube,
6 extending into of the rotatable tube and attached inside the sidewall of the
7 rotatable tube.

8 3. The vibration isolator as claimed in claim 1, wherein

9 the stationary tube further has a shoulder, a narrow neck and an exterior
10 thread, the narrow neck has a top end, the shoulder is integrally formed between
11 the bottom end of the stationary tube and the top end of the narrow neck, and the
12 exterior thread is defined around the narrow neck and has a pitch diameter,

13 the top end of the rotatable tube is rotatably connected to the stationary
14 tube and has an internal thread defined on the sidewall of the rotatable tube, the
15 internal thread has a pitch diameter larger than the pitch diameter of the exterior
16 thread on the narrow neck, and

17 the torsional damping device comprises

18 a coil spring mounted in the stationary tube and having a first
19 end attached inside the sidewall of the stationary tube, and a second end passing
20 through the narrow neck, extending out of the narrow neck and attached inside
21 the sidewall of the rotatable tube.

22 4. The vibration isolator as claimed in claim 2, wherein the stationary
23 tube further has an annular slot with a width defined in the sidewall of the
24 stationary tube near the bottom end of the stationary tube, and the torsional

1 damping device further comprises a positive limit attached to the enlarged open
2 tubular head, and the positive limit having an outside end slidably mounted in the
3 annular slot and a diameter being smaller than the width of the annular slot to
4 define a gap between the positive limit and the annular slot.

5 5. The vibration isolator as claimed in claim 3, wherein the rotatable tube
6 further has an annular slot with a width defined in the sidewall of the rotatable
7 tube near the top end of the rotatable tube, and the torsional damping device
8 further has a positive limit attached to the narrow neck, and the positive limit
9 having an outside end slidably mounted in the annular slot and a diameter being
10 smaller than the width of the annular slot to define a gap between the positive
11 limit and the annular slot.